

## THE ZOÖLOGICAL STATION AT NAPLES.

BY MAXWELL SMITH.

In 1872 Dr. Anton Dohrn founded at Naples the nucleus of the first biological station to be operated in a scientific manner. The original building was erected through the personal generosity of its founder, who in addition supplied funds for some years until the principal European governments recognized the importance of the work done and the advantages afforded the students of their respective universities. At the present time the zoölogical station, as it is called, receives annual grants from Germany, England and Italy. It is undoubtedly the largest institution of its kind, a fact which may be attributed to the co-operation just mentioned.

The buildings are situated in the Villa Nazione, a fine park, facing the Bay of Naples. In the centre, on the ground floor, is the celebrated aquarium which is open to the public. Nearby, but with a separate entrance, is the receiving room. Here the spoils of the dredging steamer are brought in and either placed in the tanks or preserved in alcohol. Off this room are smaller rooms, lined with shelves, where rows of glass jars filled with specimens are kept. On the floor above is the splendid library, a high ceiling and long windows, which admit plenty of light, combine to make this an admirable apartment for work at any time of the year. Adjacent is the new museum where Prof. Gast, the curator, is following a pleasing system of arrangement. This consists of mounting the shells of each species upon a piece of glass which is framed in narrow wood. The glass may be turned over, so that the under portion of a specimen may readily be examined. The mounted shells are laid in flat cases on a background of dark green linoleum. To this way of exhibiting specimens I have only one objection. The glue used for mounting too often cracks and falls away, or else if put on thickly it shows and detracts from the general appearance. Personally I prefer glass topped boxes. They exclude dust and may be shifted about without fear of a mix-up. The wall cases of the museum are to be filled with preserved specimens. The lighting comes from above, but is arranged in such a manner that direct sunlight is avoided, the writer noticed on exhibition a fine series of *Aporrhais serresianus* and in a wall case an enormous *Argonanta argo* L., very well preserved.

Visits to the aquarium, of course, were most interesting, the sea water is stored under the buildings and pumped into the tanks mixed with the proper proportion of air. The visitor entering the darkened corridor is at once struck by the brilliant colors and the great size of the living collection. Surely nowhere, in an aquarium, is there such a wealth of animal life. Let us examine the first tank. It is devoted exclusively to echinoderms. In the center are hundreds of feather stars (*Antedon rosacea*) clinging to dead coral stems. At first sight these appear to be plants on account of their yellow or red plumed arms. Crawling all about are other star fish of bright and somber hues. Here and there is a sea urchin and occasionally a sea cucumber. Tank 3 is devoted to mollusks. Swimming about are several squids (*Loligo*) which have the curious power of suddenly swimming backwards without the inconvenience of turning around. These delicate animals, with transparent bodies, and large eyes only live a few days in captivity. The floor of the tank is strewn with gaping red pectens (*P. jacobus*) which I noticed swimming down from a ledge of rock by suddenly opening and closing their valves, an awkward but quick means of locomotion. Clinging to the surface of a rock is a large *Umbrella mediterranea* and nearby several *Haliotis*. Several huge *Tritonium nodiferus*, with their opercula thrown to one side, may be observed slowly moving about on the bottom of the tank. One of the most interesting forms is *Aplysia limacina*, a large brown sea hare, which crawls about or swims by the aid of its wing-like lateral projections. When stones covered with vegetable matter are brought into the tank the *Aplysias* immediately bestir themselves and will clean the stones in an hour or two. The longevity of *Aplysia* in the aquarium may be ascribed to this manner of feeding. *Tethys*, one of the most beautiful naked mollusks of this region, only lives a few weeks after capture. It swims by violent writhings of the body from side to side. *Aeolis* and *Doris* make up for their small size by brilliant coloring. The delicate forms, many of them pelagic, are kept separated in glass receptacles, partly sunken in the water, the perfectly transparent *Pterotrachea*, a long thin animal with a curved proboscis and *Carinaria*, another interesting form rarely live more than a day in captivity. In a similar way are kept the beautiful mushroom-shaped *Medusa* or jelly fish, which propel themselves by opening and closing the body like an umbrella. The *Medusa* are also transparent, some

of them are of a delicate pink. They vary greatly in shape. One is like a narrow ribbon, another resembles a bunch of flowers on a central stalk. The octopus tanks attracts many visitors, especially when a crab is let down on a string for their benefit.

Through the kindness of Prof. Gast I was invited to go out on the dredging steamer "Johannis Müller," which is maintained by the zoölogical station for working the deeper portions of the Bay of Naples. This steamer is about forty feet long and carries a crew of four men, who, when not engaged at the wheel or boiler, assist in sorting out the material on deck, or managing the dredging machinery.

At 7 a. m. we left the small harbor at the west end of the city. The sun rose close to Vesuvius shortly after and promised a good day. After a run of twenty-five minutes, a point in the bay opposite the Capo, a promontory, was reached. From here the course was turned towards the Secca di Benda Palummo banks which consist of coral and sponges. Upon arrival the steamer swung around, and the "beam trawl" was let down. This was kept in the proper position on the sea bottom, by means of glass globes filled with air attached to the net. The trawl was lowered slowly into the water with wire rope, after which the steamer ran very slowly, the trawl thus dragging along the sea bottom and filling all the time. Three hauls were made with this apparatus, the trawl remaining down half an hour in each case. A mechanical indicator was used to ascertain the tension during the work. After the time mentioned had elapsed, the steamer was stopped and turned around, to facilitate the bringing up of the outfit. This done the contents were deposited upon the deck. The first haul was in 200 feet of water, the bottom, stone and mud. This locality, not being especially rich in mollusks as other parts of the bay, yielded only the following :

*Leptothyra sanguinea* (L.) Living examples.

*Pseudomurex* (*Coralliophila*). *meyendorffi* (Calc.) Two large specimens.

*Isocardia cor* (L.)

*Cardium tuberculatum* L.

*Tellina exigua* Poli.

*Pecten pes felis* (L.) Only single valves of the last four.  
(To be concluded.)